KELLEY DRYE & WARREN LLP

A LIMITED LIABILITY PARTNERSHIP

WASHINGTON HARBOUR, SUITE 400

3050 K STREET, NW

WASHINGTON, DC 20007

(202) 342-8400

FACSIMILE

(202) 342-8451

www.kelleydrye.com

NEW YORK, NY

LOS ANGELES, CA

CHICAGO, IL

HOUSTON, TX

AUSTIN, TX

PARSIPPANY, NJ

STAMFORD, CT

BRUSSELS, BELGIUM

AFFILIATE OFFICE

MUMBAI, INDIA

EDWARD A. YORKGITIS, JR.

DIRECT LINE: (202) 342-8540

EMAIL: CYORKGITIS@KELLEYDRYE.COM

December 13, 2018

BY ECFS

Marlene Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: **Elefante Group Notice of Oral *Ex Parte* Presentation; RM-11809; GN Docket Nos. 17-183, 14-177, WT Docket No. 10-112, and File No. SAT-LOA-20161115-00117**

Dear Ms. Dortch:

On December 11, 2018, Christopher DeMarche, Chief Operating Officer, and Daniel Vortherms, Vice President Engineering, of Elefante Group, Inc. ("Elefante Group"), Edward A. Yorkgitis, Jr., of Kelley Drye & Warren LLP, on behalf of Elefante Group, and Scott Kotler, Dr. Michael Hicks, and Naresh Makhijani of Lockheed Martin Corporation ("Lockheed Martin") (collectively, the "Representatives") met with officials of the International Bureau ("IB") and the Wireless Telecommunications Bureau ("WTB"). The IB officials present were Nese Guendelsberger, Jennifer Gilsenan, José Albuquerque, Dante Ibarra, and Michael Mullinix. John Schauble participated on behalf of WTB. (Messrs DeMarche, Vortherms, and Makhijani and Dr. Hicks participated by telephone.)

The purpose of the meeting was to discuss the status of Elefante Group's program by which it will provide persistent Stratospheric-Based Communications Services ("SBCS") and to reiterate the regulatory requirements needed to make SBCS a reality in the U.S., thereby helping the nation win the race to 5G. The Representatives reviewed the technical characteristics of Elefante Group's planned high-capacity, low-latency SBCS and the wholesale services it plans to provide in urban and rural areas, including backhaul to service providers supporting network densificationand redundant backhaul, enterprise wide area network solutions, and residential and business broadband. By exploiting the operational advantages of its SBCS solution to complement the capabilities of ground-based mobile and fixed services as well as satellite

communications, SBCS will produce many public benefits – help accelerate the deployment of next generation networks, support network densification and small cell build outs, deliver coverage of "urban deserts," and contribute to a bridging of the digital divide.

Messrs DeMarche and Vortherms described current development and testing of core technologies for the Elefante Group airships and communications payloads. They explained some of the engagements Elefante Group is having with vendors (in addition to its prime contractor on the technologies, Lockheed Martin) and its receipt of and responses to growing international interest in the solutions they will offer.

Elefante Group reiterated that its SBCS business case is founded upon delivery of 1 Tbps capacity in each direction to user terminals from its Stratospheric Platform Stations ("STRAPS") to User Terminals ("UTs") within an airship's nominal 70 km radius footprint. To achieve that, Elefante Group reiterated its proposal in its pending Petition for Rulemaking to access, on a co-primary and shared basis, the 21.5-23.6 and 25.25-27.5 GHz bands (for UT links) and the 71-76 and 81-86 GHz bands (for feeder links connecting terrestrial networks to the STRAPS). The Representatives reiterated the compatibility of SBCS with the incumbent services in these bands, the efficient manner in which Elefante Group will use the spectrum (through frequency reuse of 130-180 times), and the need for symmetrical uplink and downlink spectrum within a sufficiently close range (~5 GHz) to manage the size, weight, power, and cost of the airship and payload.

The Representatives also reviewed their ongoing, constructive discussions with other spectrum stakeholders in these bands, both non-Federal and Federal. Elefante Group plans to report back further to the Commission on those discussions as they progress.

Elefante Group closed the meeting by urging the issuance of a further notice of proposed rulemaking inclusive of all of the foregoing spectrum bands to enable adoption of a complete regulatory framework in the United States for SBCS by mid-2020.

A copy of the written presentation materials used in the meeting with the IB and the WTB officials is attached hereto.

Pursuant to Section 1.1206(b) of the Commission's Rules, this letter is being filed electronically.

Respectfully submitted,

Edward A. Yorkgitis, Jr.

Counsel to Elefante Group, Inc.

cc: Nese Guendelsberger
Jennifer Gilsenan
José Albuquerque
Dante Ibarra
Michael Mullinix
John Schauble

Elefante Group Stratospheric-Based Communications Service Update

Meeting with the International Bureau

December 11, 2018

Agenda

Development and testing key technologies for airship and communications payload

Engagement of key vendors

Responding to international interest

Discussions with Federal and non-Federal stakeholders

Proposed path to timely SBCS Rules

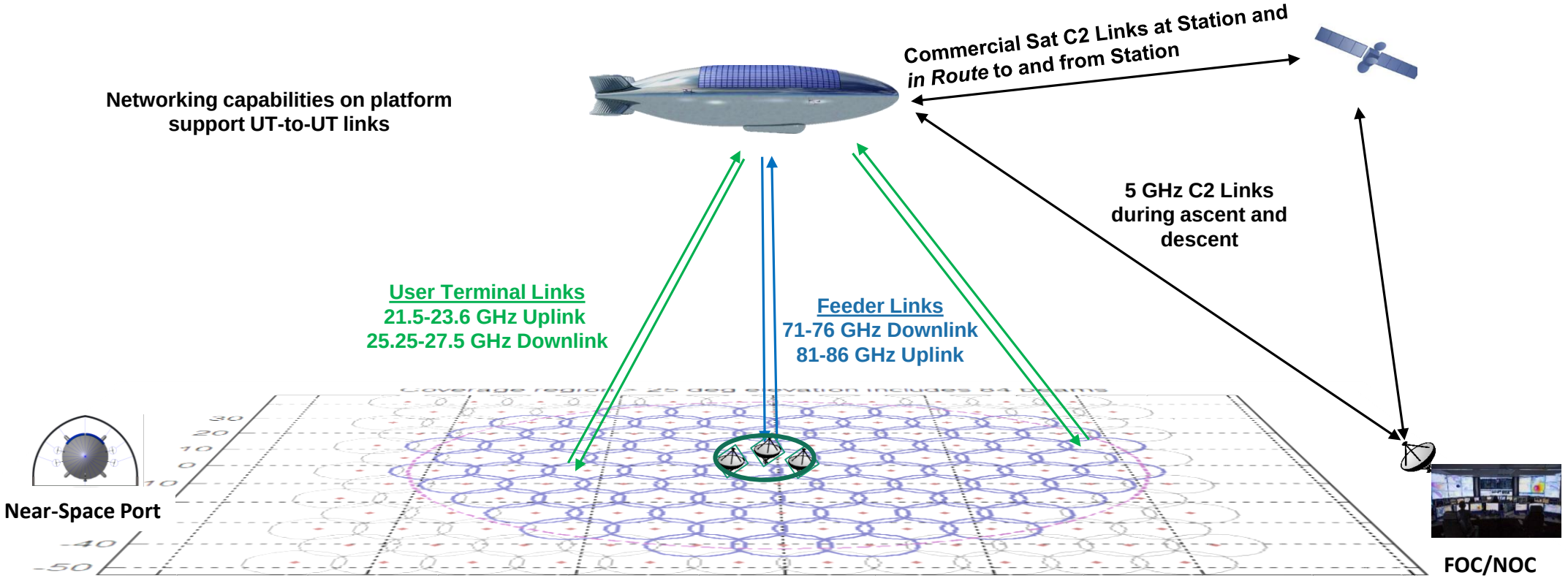
The U.S. Should Seize Leadership in Encouraging Deployment of Stratospheric Communications through Timely Adoption of SBCS Rules Independent of WRC-19 Agenda Item 1.14 to Support National Goals to "Win the Race to 5G"

Elefante Group Vision and Business Plan

- Be the world leader in transformative persistent, low latency, stratospheric-based communications and IoT-enabling solutions
- Bring 1 Tbps bi-directional stratospheric capacity (per platform) to U.S. market first and help the country "win the race to 5G"
- Support wholesale fixed communications serving urban and rural areas
  - 4G/5G Backhaul
  - Enterprise WAN
  - Residential and Business Broadband
  - Sensor & IoT
- Bypass significant infrastructure challenges inherent in ground-based wireless and IP network deployments and upgrades
  - Ubiquitous, near-instantaneous reach within footprint
  - "Network in the Sky"
  - Flexible resource management

Elefante Group's broadband solution will cost at least 80% less to deliver equivalent services as alternative ground-based builds, *including 5G*

Elefante Stratospheric-Based Communications Architecture



Not to scale

Elefante Group seeks co-primary regulatory status for SBCS in both Ka- and E-Bands within the Fixed Services

Airship Development

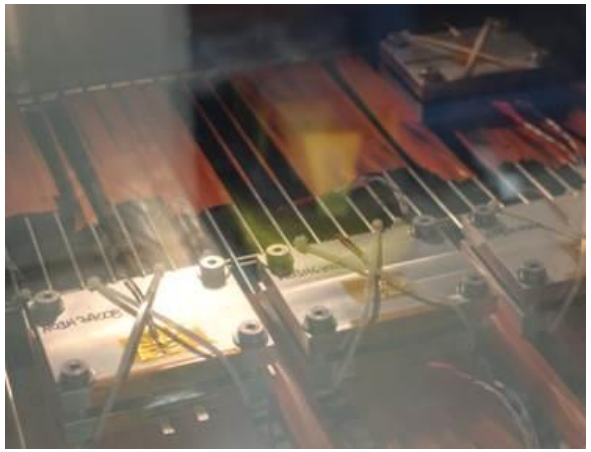
Ongoing Alpha & Beta design

Sample of recent activities include:

- Maturation of airship design
- Extensive testing of core technologies
- Hull structural analysis
- Computational fluid dynamics and thermal analyses
- Turn analysis and turbulence response modeling
- Minimum speed thermal analysis
- Advanced power systems
- Vehicle management system

Pre-manufacturing preparations

- Preparation of air dock for production
- Expansion of production support labs
- Long lead discussion with envelope manufacturers
- Near-space port design



Battery Cells Under Test

Helium Cell Testing

Payload Development

Sample of recent activities include:

- Airship payload interface system
  - Structural analyses, effects of airship motion, windscreen and thermal loading
- Long lead development such as
  - Resource management
  - Switching components
- Working with waveform vendors, antenna suppliers, e-band equipment manufacturers

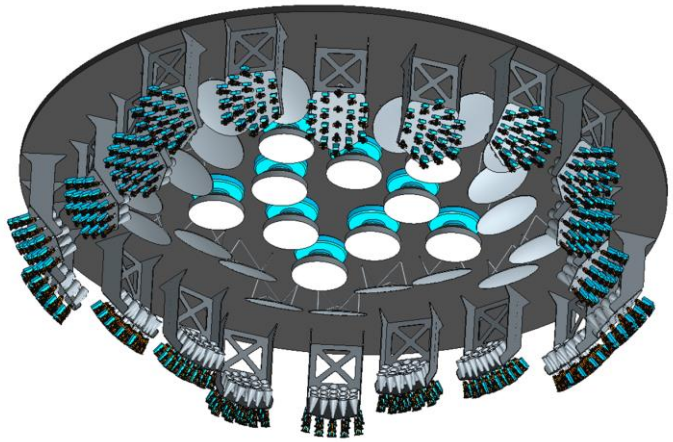
Testing antennas (performance versus mass)

Mass and power refinements

Continued development of payload switching components including production design and power reduction

Test plan being refined including use of experimental licenses

Investigating sensors for burgeoning government agency interest



Luneburg Lens in Test

Stakeholder Discussions to Refine Compatibility Conditions

Audacy – ISS in the 23 GHz Band

- Seek common ground to resolve any open questions related to user satellites; compatibility expected

Iridium – ISS in the 23 GHz Band

- Compatibility analysis shared in advance of Petition; Iridium hasn't advanced any concerns

OneWeb – FSS in the 71-76 and 81-86 GHz (the "E-Band")

- Small chance of interference between proposed OneWeb stations and SBCS can be addressed through coordination

FWCC – Fixed services in 21.5-23.6 GHz and 71-76/81-86 GHz

- Constructive discussions and sharing of information to ensure compatibility and address concerns re both Ka- and E-Bands

Mobile Industry – Mutual interest in 26 GHz Band

- Welcoming engagement on issues /questions related to compatibility

NOAA – EESS in 22 GHz, 25.5-27.5 GHZ, and 86-92 GHz Bands

- Last met in late October; looking to complete work on compatibility analyses and sharing conditions by early Q1 2019

NASA – Scientific Services and ISS/TDRSS in 21/22 and 26 GHz

- Reengaging on compatibility analyses and sharing conditions in Cleveland this week

DOD – AMS below 21.5 GHz and in the 26 GHz Band

- Have reached understanding regarding compatibility with AMS operating below 21.5 GHz; have shared Elefante Group and Lockheed Martin 26 GHz STRAPS and mobile compatibility studies with DOD CIO's office; planning to meet with SMOs on compatibility analyses

NTIA – Compatibility studies generally

- In discussions with OSM regarding compatibility studies generally, including mobile compatibility with incumbents

NSF and NRAO – RAS in 23.6-24.0 and 76-94 GHz Bands

- Have proposed solutions for compatibility

Considerations in Adopting Rules for SBCS

- Sufficient co-primary spectrum to close SBCS business case
  - 1 Tbps capacity in both directions to provide wholesale solutions to urban as well as rural areas – by comparison HAPS is only tens of Gbps
  - Bands that support consistent and sufficient channel bandwidths to meet operational needs
  - Support for spectrum resource management given co-primary neighbors
- Spectrum made available for SBCS in each direction should be symmetrical
  - Equal amounts of forward and return link spectrum required for applications such as network backhaul and Enterprise WAN
  - HAPS applications, by contrast, are typically limited to asymmetric uses, i.e., Internet access
- Uplink and downlink bands in relative proximity
  - Uplink and downlink bands within ~5 GHz of each other permit a single antenna aperture on the STRAPS and smaller and less expensive ground station antennas
- Spectrum with compatible co-primary users
  - SBCS, largely because of its geometries, is highly and mutually compatible with virtually all other services – exception is mobile's likely interference *into* SBCS (as is case into other services)
  - Co-primary status is required to preserve coordination results and protect deployments while permitting growth and innovation by all users in a fair and equitable manner

Path to Timely SBCS Rules

- The 22-23 and 26 GHz Bands are essential for the realization of high capacity, low latency, 1 Tbps SBCS in the United States

- SBCS will support acceleration of 5G and future next generation network deployments
  - SBCS will improve broadband and next generation access in “urban deserts”
  - SBCS will help close the digital divide in rural America
  - SBCS will deliver numerous other benefits, such as job creation and disaster recovery

- To adopt rules for SBCS, Elefante Group urges the Commission to expeditiously issue a Further NPRM in the *Spectrum Frontiers* proceeding to expand consideration of the 26 GHz Band and to bring in additional bands – *i.e.,* 22-23 GHz and E-Bands – to allow for adoption of a complete regulatory framework for deployment of SBCS in the Fixed Services on a co-primary basis
  - The Commission should proceed to adopt SBCS rules for the United States independently of developments related to the ITU regarding HAPS so as to assume a leadership role in the stratosphere
  - The Commission should complete the SBCS rulemaking by June 2020

Questions?

CONTACTS

Chip Yorkgitis
Partner
Kelly Drye & Warren LLP
202-342-8540
cyorkgitis@kelleydrye.com

Chris DeMarche
Chief Operations Officer
Elefante Group
chris.demarche@elefantegroup.com

Dan Vortherms
Vice President of Engineering
Elefante Group
dan.vortherms@elefantegroup.com